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OBSERVATIONS

ON

INTERMITTENT, REMITTENT & CONGESTIVE

FEVER:

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By THOMAS BARBOUR, M.D.,

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1845.

"*Professor THOMAS BARBOUR.*

"SIR,

"Pursuant to the action of a meeting of the Students of the Medical Department of Kemper College, before whom your very able and interesting Lectures on the Intermittent, Remittent, and Congestive forms of Fever, were delivered, we were appointed a Committee, and instructed to ask of you a copy, for publication in pamphlet form.

"In the view of that body, the high excellence of the Lectures, on a subject touching so directly the people of the Mississippi Valley, makes it a matter of public interest, and we cheerfully add our voices to the call for its publication.

"Be pleased to accept the assurances of the high respect with which we are,

"Your fellow-citizens,

"R. S. WILEY,	} COMMITTEE.
"J. R. POYNTER,	
"D. O. GLASCOCK,	
"E. B. STRODE,	
"H. NANTZ,	}

"Kemper College, December 12th, 1844."

"To Messrs. WILEY, POYNTER, GLASCOCK,
STRODE, NANTZ, Committee.

"GENTLEMEN,

"I received, to-day, your polite note, expressive of the desire of the Medical Class of Kemper College to have, for publication in pamphlet form, a copy of my lectures on Intermittent, Remittent, and Congestive Fever; and in reply to it, I beg leave, through you, to say, to the highly respectable and intelligent class which you represent, that, though I had not, at the time of the delivery of the lectures referred to, the remotest idea of their publication, as they desire it, on account of the value they are disposed to attach to them, I cannot, consistently with the relation I sustain to them, withhold my consent.

"I am, Gentlemen,

"Very respectfully, yours, &c.,

"THOMAS BARBOUR.

"St. Louis, December 12th, 1844."

PREFACE.

IN the whole circle of medical science, there is no one subject which has excited so much interest, or which has commanded so much of the attention of the votaries of medicine, as that of Fever, in all its various modifications. From the very dawn of medical history, its paramount importance has been universally acknowledged; and the best talents in every age have been devoted to the elucidation of its nature, and the discovery of its appropriate treatment; nor should we be surprised at this, when we reflect, how prevalent this scourge of the human family is, and that its course has ever been marked by the numerous victims that have fallen under its fatal power.

When we consider how much has been written upon this fertile theme, it is a reasonable supposition, that, by this time, we should have arrived at some definite conclusions as to the nature of fever, and attained an *accurate* knowledge of the principles which should guide us in its treatment; but that we have not, is clearly deducible from the great discrepancy of opinion which prevails, at the present day, among enlightened medical men, in relation to the true pathology and treatment of what are called essential fevers. The results of past researches have been, in an eminent degree, beneficial and encouraging, as false and absurd doctrines, and, of consequence, erroneous modes of treatment, have been successively abandoned, and superseded by more rational systems based on sound induction. Still we are bound to confess—humiliating as may be the acknowledgement—that, notwithstanding all the accumulated light of past ages, the subject of fever is yet involved in much obscurity. Judging, however, of our future advancement from the results of the past, we are encouraged to hope, that, through the inductive system which is now being applied to the investigation of medical science, at no distant period, as perfect a degree of knowl-

But the question, whether the matter of miasmata is organic or inorganic, though interesting in a speculative point of view, does not comport with the practical design of this brief treatise; I shall, therefore, leave the consideration of the nature of this occult poison, to enquire through what channel it enters into the human system, and so affects it as to develop such diversified forms of fever.

That it makes its primary morbid impression on the nervous system, does not admit of a rational doubt; but whether the skin, the mucous membrane of the stomach, or the bronchial lining, is the recipient point of that impression, is a question concerning which there is much difference of opinion. From the comparative insensibility of the skin; and from the fact, that the stomach is comparatively inaccessible, whilst the bronchial mucous membrane is constantly exposed to the action of the miasmatic poison with which the air of infected districts must be charged, we may reasonably infer, that the nervous filaments spread on that extensive surface must receive the primary impression, which, being communicated to the great nervous centres, is ultimately radiated throughout the entire system, and so disturbs the healthy balance between the nervous and vascular systems, as to develop the forms of fever under consideration, by a series of actions which I will endeavor to explain.

This leads me to enquire, what is the first link in the chain of morbid action, and what are the consecutive phenomena which constitute the pathology of intermittent fever? As has been stated, it is most probable that the primary impression of the peculiar cause of fever is on the bronchial lining, and that that impression is transmitted to the great centres of the nervous system. What is the immediate effect of that impression? A close observation of the manifestations which characterize the incipency of every attack, makes it obvious, that it must be diminished nervous sensibility. That this is the case, seems to be conclusively demonstrated by the great languor and lassitude, anorexia, muscular weakness, and the indisposition to mental and corporeal exertion which universally precede the full development of the fever. Diminished nervous sensibility must, therefore, be considered the first event in the series of morbid actions. The second event, I suppose to be morbid irritability of the nervous system, and, of consequence, an inequilibrium of nervous distri-

bution. Hence the internal organs become foci to which nervous influence tends; and the minute ramifications of nerves destined to the surface, and designed to control the action of the capillary vessels, cease to transmit their natural amount of stimulus which is essential to healthy capillary circulation, which becomes almost entirely suspended on account of the constriction of the minute vessels. A third event now follows: a loss in the balance of the circulation, the blood being determined to the internal viscera, in consequence of the intimate relation which subsists between the nervous and muscular systems. A train of phenomena now arises which peculiarly characterizes an intermittent paroxysm: in proportion as the blood recedes from the contracted capillaries of the surface, and accumulates in the larger trunks and internal organs, the skin becomes cold, pale and contracted, and the pulse feeble and irregular; the patient complains of a sense of weight in the head, dull headache, and pain in the back and extremities; there is more or less confusion of the intellect; there is great muscular weakness, accompanied with irregular contractions, causing what is called shivering, or rigor, which may properly be regarded as a species of convulsions; and the patient yawns very frequently. The foregoing symptoms are obviously dependant upon congestion of the brain and spinal marrow. The lungs being engorged, there is a painful sense of oppression in the chest; the respiration is hurried and laborious, and the patient often sighs deeply. The heart's action being disturbed by the undue accumulation of blood on its right side, there is a painful sense of oppression about the heart; and the pulse is, most generally, very irregular, small, contracted—sometimes quick—at others, slow and oppressed. The chylipoietic viscera, together with the spleen, being deeply congested, there is a sense of great oppression in the epigastric and hypochondriac regions, with nausea—sometimes bilious vomiting, and great thirst.

The above phenomena, collectively, constitute what is called the cold stage of an intermittent paroxysm; the duration of which is various, according to several modifying circumstances, but chiefly to the various degrees of constitutional strength.

Sooner or later, the excessive irritability of the nervous system becomes expended, and the brain and spinal marrow, which regulate the action of all the vital functions, return to their normal

state of excitability, and the heart and general vascular system, down to the ultimate capillary vessels, by degrees, receive their natural supply of nervous stimulus, in consequence of which, the great central organ of the circulation is excited to more vigorous action, and enabled to disburden itself of the oppressive load under which it had labored; and the capillaries being relieved of their constriction, freely admit their usual currents; hence, a centrifugal movement takes place in the circulating fluid, and full re-action is soon established. This constitutes the fourth important event in the series, by which, what is called the hot stage of an intermittent paroxysm is developed.

A new train of phenomena now presents itself: the face, having been pale and contracted, becomes flushed and rather swollen; the general surface becomes hot and dry; the pulse is quick, tense and full; there is much thirst; there is increased pain in the head, back and extremities; the sensorial powers are more or less disturbed; the respiration is anxious and oppressed; the urine is scanty and very high colored, and the patient is exceedingly restless; sometimes there is great irritability of the stomach. The natural balance between the nervous and vascular systems having been completely restored, and the vascular re-action consequent thereon having continued for a greater or less length of time, the excess of excitability, which always transcends a normal degree when the balance between the nervous and vascular systems is disturbed, becomes exhausted, and the febrile symptoms rapidly subside; and the third and last stage of the paroxysm is established by general perspiration, which, beginning upon the face and neck, gradually appears over the whole surface. This last event completes the series of phenomena which distinguish an intermittent paroxysm, and the patient is restored to a comparatively apyrexial state—the various functions of his body having resumed, in a greater or less degree, their natural action. Sometimes, though rarely, there is but one regular paroxysm, embracing the cold, the hot and sweating stages—after which, convalescence commences, and the system returns to a perfect state of health; most generally, however, intermittents are subject to repeated revolutions of exacerbations and intermissions, which vary considerably in their duration. When the interval which intervenes between the beginning of one paroxysm and that of the succeeding one is twenty-

four hours, authors designate the type by the term quotidian; when the interval is forty-eight hours, it is called a tertian; and when seventy-two hours, it is called a quartan ague. The quartan type is exceedingly rare in its occurrence; the quotidian and tertian, especially the latter, are very common. The most usual form, both of the intermittent and remittent, in this country, is what is called the double tertian, being subject to quotidian paroxysms, but each alternate one being the most severe. This division is certainly important in a practical point of view, as, by a close observation of the peculiar type, we can be better enabled to adapt our remedies to the prevention of succeeding paroxysms.

The subject, however, admits of another division, which, being based on certain important pathological conditions, is, I conceive, of very great practical value; as a strict regard to it is very essential to the adoption of appropriate modifications of treatment. The division to which I refer, is into the simple, the inflammatory, and the congestive forms of intermittent: the simple form usually occurs in individuals of healthy constitutions, in whom there is no weak point or local affection whatever. The characteristics of this form are general nervous irritability, followed by general simple excitement, during which there is a healthy balance of the circulation, in consequence of which there is no serious topical disorder. This form is almost always very regular in its course, and tends, spontaneously, to a favorable issue.

The inflammatory form generally occurs in young and robust individuals, in whom there is some lurking irritation, especially in the mucous coat of the stomach or bowels, or in the coverings of the brain, more particularly the arachnoid. This form is characterized by a very severe cold stage, followed by a hot stage, in which the excitement is intense; the pulse being very full and bounding, the face flushed excessively, the skin hotter and dryer than usual in simple intermittents, and the thirst very ardent, together with severe pain in the head, back and extremities. The third, or sweating stage, is, generally, imperfectly developed, and throughout the whole intermission the patient complains of more or less headache, thirst, and restlessness, and the pulse continues quicker and tenser, and the skin hotter and dryer than usual in the intermission.

The congestive form occurs, generally, in persons of naturally

feeble constitutions, or in those who are debilitated from any cause. If, under either of the above conditions, there should exist any fixed irritation about the brain, the lungs, or the abdominal viscera, the point of irritation will become a fixed centre of attraction, to which the circulating fluid will be unduly determined; in consequence of which, the healthy balance of the circulation will be very greatly disturbed, and internal congestions induced, at the expense of the superficial capillary circulation, from which ensues the form under consideration, and which is characterized by a protracted cold stage, and imperfectly developed hot stage. During the cold stage, which is of unusual duration, the patient complains of a sense of weight or oppression in the head; deep-seated headache or giddiness; the respiration is very anxious, hurried and oppressed; there is more or less oppression experienced in the epigastric and hypochondriac regions, accompanied with a sense of internal heat and restlessness; the pulse is weak, irregular, and oppressed; and the whole surface is exceedingly cold and shrunken. During the hot stage, which is always imperfect and very slow in its development, the system continues to be more or less oppressed; the breathing is rather quick and laborious; the pulse is rather frequent and small; the surface is moderately and partially warm, the extremities being cooler than the head or trunk, and there is dull pain in the head, back and extremities, and the patient complains of much thirst, sense of burning in the stomach, and restlessness. This form much more frequently occurs in the course of the disease, after several revolutions have been passed, than at the commencement.

The treatment of intermittent fever next demands our attention, and I shall consider it with special reference to the pathological conditions above adverted to; that is, I shall notice the modifications of treatment most appropriate to the simple, the inflammatory, and the congestive varieties.

The simple regular intermittents are exceedingly mild, and require but little attention, comparatively; there being no serious disorder in any of the important functions, and there, consequently, being a strong natural tendency to spontaneous termination, they can, most generally, be easily and early conducted to a favorable issue.

There are two important indications to be fulfilled in the management of all the forms of intermittent fever; the first is, to conduct the patient through the paroxysm by relieving, as much as possible, his unpleasant sensations; and the second is, to adopt such measures during the intermission, as will interrupt the course of the disease, and secure the patient against the recurrence of the paroxysms; the first is palliative, the second curative.

The object to be aimed at in the cold stage of the paroxysm, is to equalize the circulation by the application of such means as are calculated to aid the reactive powers of nature, and promote the determination of blood to the surface; by which the internal organs are relieved of their congestion. For this purpose, it is generally sufficient to confine the patient to bed; have him well covered with warmed blankets; apply hot bricks, or bottles filled with hot water, to the extremities and sides; administer a full dose of laudanum or paregoric, and give warm drinks freely, as sage or eupatorium tea. These measures, almost always, in simple cases, speedily induce full reaction, and the development of the hot stage. It now becomes important to moderate the excitement—to obviate local inflammations, which are always liable to occur under high vascular reaction, and to procure an early and perfect intermission. With these views, it is generally sufficient to place the patient in a well-ventilated apartment; have him lightly covered; administer a seidlitz powder, or an effervescent senna draught, to evacuate the bowels; have him repeatedly sponged with tepid vinegar and water, and give cold acidulated drinks. The above means usually induce a speedy resolution of the hot, and the supervention of the sweating stage. During this stage, all that is necessary is, to promote the perspiration, *if only partial*, by the use of warm drinks, as sage, balm, elder blossom, or eupatorium tea; and, *if excessive*, by changing the patient's bed clothes and linen, and by giving moderately cold drinks, as rice-water acidulated with citric acid, or elixir vitriol.

The third stage being completed, and the system having returned to an apyrexial state, the treatment during the intermission, and which is designed for the radical cure of the disease, demands our special attention. The Peruvian bark, and its valuable preparation, sulphate of quinine, stand pre-eminent among the remedial agents which have been used for the radical

cure of intermittents; and surely, when judiciously used, are justly entitled to our highest confidence. Much difference of opinion, however, prevails among authors in relation, 1st, to the necessity of a preparation of the system previous to the use of this potent remedy; 2d, to the most proper period of the disease; and 3d, to the most proper time of the intermission, for its administration, in order to obtain its greatest prophylactic power. According to my experience, there is no necessity for preliminary preparation; whenever the intermission is complete, that is, when the pulse is soft, slow and regular, the skin moist and cool, the tongue moist and not very heavily coated, and when there is little or no headache—under such circumstances, the sulphate of quinine will, almost always, arrest the course of the disease after two or three paroxysms. If the tongue is much furred, and there are other evidences of vitiated secretions, especially the biliary, it is proper to administer a mild mercurial purgative, say 10 grs. of calomel combined with 10 grs. of rhubarb, some time during the intermission. When I deem it necessary to exhibit such a purgative, I usually do so at bed-time, and confine the use of quinine, generally, to the forenoon. It is rarely necessary to repeat purgative medicines in mild intermittents. I am convinced that much injury has been done by the use of frequently repeated active cathartics in these cases, by which, gastric and intestinal irritation is excited; and simple, often converted into complicated cases. Under favorable circumstances, that is, where the intermission is complete, it is best, most generally, to avoid the use of evacuant medicine altogether, excepting some cooling aperient, as a seidlitz power, during the hot stage, until the paroxysms are arrested, when a mild mercurial purgative should be administered once or twice, in order to improve the secretions, and thus render a relapse less liable. In regard to the period of the disease when the quinine should be administered, I do not hesitate to state that we should never permit a perfect intermission to pass by without availing ourselves of the preventive power of this valuable tonic. Some, as the late Dr. Eberle, for whose character and opinion I have the highest respect, urge, that it is preferable to postpone the use of quinine until after the fifth or seventh paroxysm, as, when thus exhibited, relapses are much more uncommon. According to my observation, all simple cases can generally be arrested by it after the second or third

paroxysm, with but little tendency to relapse, if the system is kept under its influence for several days after the last; and in all cases of a serious character, it is highly dangerous to delay its use, on account of the visceral congestions and inflammations which are apt to occur in consequence of repeated paroxysms, during which the internal organs become more and more embarrassed, because reaction becoming more imperfect, the disgorgement of the organs becomes less after each successive exacerbation; hence the patient is apt to pass into the congestive condition heretofore spoken of, or inflammation being established in the seats of congestion, he may ultimately be destroyed by excess of excitement. These observations are designed to apply especially to intermittents, as they occur in the southwest, where the very mildest form is prone, if neglected or mismanaged, to assume the inflammatory, or congestive character.

The next point to be determined is, at what time, during the intermission, should quinine be exhibited, in order to obtain its greatest powers? My experience leads me to this conclusion: if the intermittent is simple, the intermission complete, and the recurrence of the paroxysms regular, it is decidedly preferable to postpone the administration until within two or three hours of the expected paroxysm; then, to give a large dose, say from 10 to 20 grs., combined with from 10 to 20 grs. of Dover powder, and, at the same time, have the patient well covered in bed, make hot applications to the extremities, and give warm sage or ginger tea to drink. This combination I regard as highly valuable, it being calculated to fulfil all the prominent indications; the opium tending to allay morbid irritability; the ipecac., to lessen any excitement which may exist in the vessels, and act gently on the skin, the functions of which are usually considerably disordered; whilst the full dose of the quinine braces up and gives tone to the nervous system, and, by the peculiar impression which it makes, tends, in a powerful degree, to interrupt the chain of morbid action peculiar to this disease. Since I have adopted this practice, I can confidently say, that very few of the cases which have come under my observation, during the last ten years, have continued beyond the second or third paroxysm, and a very small proportion has been subject to relapse.

If the case is more severe, the paroxysms irregular, and especially if there is a tendency to the congestive form, I think it

highly important to take advantage of the earliest favorable opportunity to give the quinine, and to repeat it frequently throughout the whole intermission. Under such circumstances, I generally administer 5 grains of quinine combined with 5 of Dover powder, and repeat every three hours—increasing to 15 or 20 of each during the last two or three hours of the intermission. As auxiliary to the above, as in the simple regular form, external heat should be applied, and warm drinks, as sage or ginger tea, should be freely allowed; and in urgent cases, sinapisms should be applied to the extremities two or three hours before the expected paroxysm, in order to avert it. In the treatment of the inflammatory form, a decidedly antiphlogistic course is pre-requisite to the use of quinine or any other remedies usually administered with the view of radical cure. If the pulse is quick, very tense and full, the skin hot and dry, and there is much thirst and headache, blood should be drawn from the arm until a decided impression is made upon the constitution, after which, should there be strong indications of cerebral disturbance, or gastric or enteric irritation, cups should be applied to the temples, the back of the neck, or between the shoulders, to the epigastrium, or over any part of the abdomen, according to the seats of local affection. Having bled, and cupped, if deemed advisable, the bowels should be effectually evacuated by some mild purgative, as 10 grains each of calomel and rhubarb, after which, if necessary, a little cold-drawn castor-oil, or infusion of senna and manna should be administered. The mercurial purgative should be repeated every other night, so long as the excitement continues unabated, and the secretions, especially the biliary, vitiated in appearance. As auxiliary to the above, the patient should be repeatedly sponged with tepid vinegar and water, or if the excitement is very high, we should make use of an occasional tepid affusion; he should be allowed the free use of cold acid drink, and if there should be much gastric irritability, the spirit of mindererus, or effervescent draughts made with citric acid and soda. The above measures, especially if the general blood-letting is decisively adopted during the hot stage, are generally sufficient to allay the febrile excitement, and induce a more perfect intermission, manifested by a slower and softer pulse, a cooler and more moist skin, and a great abatement of the cerebral and gastric symptoms. As soon as this favorable change

takes place, quinine should be administered, with the view of arresting the disease. I usually give 5 grains each of quinine and Dover's powder, and repeat every three hours during the absence of excitement, taking the precaution to enlarge the dose to 10 grains each towards the close of the intermission, so as to make a strong impression upon the nervous system. During the use of the above combination, the patient should drink freely of warm sage, balm or eupatorium tea, which, by acting gently on the skin, enables the quinine to be better borne; if the quinine cannot be borne, that is, if it causes much headache or excitement of the pulse, a strong infusion of serpentaria should be substituted for it, until we procure a complete intermission.

In the congestive modification, in which the cold stage is usually very protracted, and the hot stage imperfectly developed, the system continuing more or less oppressed in consequence of the great inequality of the circulation, it is highly important to aid nature in her efforts to throw off the oppressive load under which she is struggling, by the use of means calculated to invite the circulation to the surface; and when the lost balance is restored, to guard the system against the recurrence of the paroxysms, which, in feeble, debilitated constitutions, are apt to be followed by fatal consequences.

If called to a patient during the cold stage, a full dose of laudanum or paregoric, say from 40 to 60 drops of the former, and from one to two drachms of the latter, should be immediately administered; the patient's extremities should be placed in a hot salt or mustard bath, and permitted to remain 20 or 30 minutes, after which, they should be well rubbed, and warm mustard plasters applied to them, and continued on until the skin is decidedly inflamed; a bag of hot salt, or a bottle of hot water, should be applied over the epigastrium, and repeated until reaction is induced; the patient should drink freely of hot sage, ginger, or serpentaria tea; and 5 grains each of calomel, camphor, quinine, and Dover's powder, should be administered every two or three hours until reaction ensues. If the reaction is imperfect, that is, if the skin is only moderately and partially warm, if the pulse is quick, rather small and irregular, and there is a sense of internal heat and oppression, we have the best evidences that can be afforded of suffocated excitement; to remove which, it is highly necessary to abstract blood very *cautiously*. The plan I generally adopt is, to place

the patient's extremities in hot water, made more stimulating with salt or mustard, the lower in a tub deep enough to extend to the knees, the hands and fore-arms in a basin held by an assistant: I then open a vein, and keep my fingers upon the opposite pulse; if the pulse flags, and the patient grows sick and faint, I close the orifice immediately, and administer a little wine or brandy, and continue the means already stated, to promote reaction, and sustain the system. If, however, the pulse rises and becomes regular and fuller, which it most generally does under such circumstances, I cautiously continue the abstraction until the pulse becomes pretty well developed—the rapid effects of which are, a generally warm skin, and a great relief of the internal sense of oppression. To aid the general blood-letting, it is sometimes necessary to apply cups over the chief seats of congestion, and follow them with large sinapisms, and allow the patient to drink freely of warm sage or serpentaria tea.

If reaction becomes fully established, and the excitement is only moderate, all that is necessary is, to sponge the surface occasionally, with tepid vinegar and water, let the patient have moderately cold acid drinks, and administer mild, alterant and aperient medicines, with the view of evacuating the intestines of their vitiated contents, and improving the various secretions; for this purpose, I generally use the following combination:—Blue mass, 3 grs.; rhubarb, 3 grs.; ipecac., $\frac{1}{2}$ to 1 gr., or, if the alvine discharges are rather thin, 5 grs. of Dover's powder. This combination should be repeated every six or eight hours, until the excitement is subdued, and the biliary secretion properly excited. If, however, after reaction has taken place, the excitement should be very violent, as is the case sometimes, it is highly important to reduce it, in order to obviate the supervention of inflammation in the organs which have been so lately gorged with blood, and of course greatly weakened; for this purpose, tepid affusion should be applied, minute portions of calomel and ipecac., say 1 gr. of the former and from $\frac{1}{2}$ to 1 gr. of the latter, should be administered every two hours. These means are generally sufficient to moderate the febrile excitement; but, if they prove inadequate, cups should be freely applied over the chief seats of congestion; or we may venture to draw blood from the arm to a moderate extent, taking care to stop the operation upon the slightest manifestation of failure in the pulse. This precaution is always very necessary,

on account of the great liability to collapse, after previous congestion, by which the vital powers are considerably weakened.

If, under the use of the above measures, the vascular excitement is sufficiently lowered, manifested by a softer and slower pulse, and a cooler and more soft skin, the system should be brought under the influence of quinine as soon as possible; with this view, from 5 to 10 grs. of this salt, combined with 5 grs. of camphor, and the same quantity of Dover's powder, should be repeated every three hours during the intermission; and about two or three hours before the expected paroxysm, the quinine and Dover's powder should be increased to 20 grs. each, and large sinapisms should be applied to the extremities, and one over the whole abdomen. This energetic course of treatment very rarely fails to prevent the recurrence of the paroxysm.

Most practitioners in the United States are opposed to the use of quinine in such large doses as I have recommended, upon the ground that it is calculated, when thus exhibited, to aggravate the disease, by increasing the excitement, and ultimately super-inducing local inflammations. My observation leads me to believe that such serious consequences rarely occur. I have been in the habit, for ten years past, of giving it in the doses above stated, and I do not recollect one single instance in which there was decided detriment from it, provided the system was in the proper condition to receive it. My impression is, that its action upon the animal economy is very similar to that of opium, and that, like the latter, large portions are more decidedly sedative. This view of its *modus operandi* was first suggested, I believe, by Dr. Thomas Fearn, of Huntsville, Alabama; and of its correctness I am entirely satisfied, from close observation of its effects. Whenever I feel doubtful as to the propriety of administering it, and still feel disposed to venture upon it, I invariably give large doses combined with Dover's powder or ipecac.; it may be, that the Dover's powder may so far influence its action as to enable the system to tolerate it, when it otherwise could not.

In all the forms of intermittent, whether simple, inflammatory, or congestive, it is proper to continue the use of quinine for several days after the disease appears to be arrested, in order to guard against relapse; and as the secretions, especially the biliary, are most generally disordered, mild alterant and aperient medicines should be administered occasionally, until the tongue be-

comes clean, and the alvine discharges assume a healthy aspect; for this purpose, I give 5 grs. of blue mass and 10 grs. of rhubarb, every second or third night; and, on the following day, if necessary, a little castor-oil, or senna and manna infusion. In addition to these simple precautionary measures, the patient should, for some considerable time, avoid exposure in damp, chilly weather; and if of weak constitution, ought to wear flannel next the body, on account of the morbid sensibility of the skin to the impressions of cold in all such individuals.

Intermittents not unfrequently become chronic, and continue to recur, in some cases, after regular, in others, after very irregular intervals, for a long time, notwithstanding the diligent use of all the means commonly adopted to eradicate them.

The pathological conditions on which the chronic form depends are very different, and should be carefully discriminated, as the treatment must be modified accordingly. In some cases, there is no evidence of visceral disorder or disease; still, the paroxysms continue to recur, after regular or irregular intervals, the intermissions being so perfect, and the general health so little affected by them, that the patients are generally not only able to go about, but to attend to their usual avocations. From these circumstances, it is obvious, that the periodical return of chill and fever must be dependant upon a *habit* of the nervous system, acquired by a frequent repetition of the same diseased actions. When dependant on this cause, it is necessary to make a new impression upon the nervous system in order to interrupt this disagreeable, *chilly habit*; for this purpose, I would recommend large doses of quinine, to be repeated three or four times during the intermission, together with active, but agreeable exercise of the mind and body. The influence of the mind, in arresting this disease, has ever been acknowledged, and every practitioner must have met with interesting illustrations of its power, when judiciously directed, to avert an expected paroxysm. I generally advise such patients to clothe themselves warmly, and take an interesting tour, if compatible with their situations, on horseback, or in a pleasant vehicle, as circumstances may indicate. The change of scenery and of associations, incident to travelling, exerts a salutary revulsive influence by which the mind is diverted from bodily afflictions, and directed to pleasing objects of reflection; whilst the change of air, of diet, and of habits, and the exercise,

are well calculated to improve the secretions, promote digestion, and invigorate the whole system. If travelling does not comport with the situation of a patient, or if it proves unavailing, I would advise the use of the cold shower-bath every morning, and to be repeated about two hours before the expected paroxysm. This is a safe and valuable remedy; its remote effect is that of a powerful general tonic; its immediate effect is a comfortable reaction about the time the chill usually comes on.

The most common conditions, however, on which chronic intermittents depend, particularly in more southern latitudes, are enlargements and indurations of the liver or spleen, which are frequently associated with jaundice or dropsy. Cases dependant upon these conditions are exceedingly numerous in unhealthy localities in the south, where patients, with pale, sallow complexion, bloated face, œdematous feet, and obvious enlargement of the liver or spleen, are often seen engaged in their ordinary occupations, although subject to frequent returns of their chill.

The most important indication to be fulfilled, in the treatment of these cases, is, to remove the visceral disease. For this purpose, the following combination will generally prove sufficient, if aided by long-continued counter-irritation: blue mass, 3 grs.; ext. hyosciamus, 3 grs.; aloes, 1 to 2 grs., made into two pills, and given every morning and night, at first, and afterward, every night, or every other night. Counter-irritation should be kept up by means of tartar emetic ointment, a seton, or what I have used with a very good effect, a liniment, composed by dissolving half an ounce of camphor in an ounce of spirits of turpentine, and adding 30 or 40 drops of croton oil. If the above combination appears to be inadequate to the resolution of the visceral disease, I would recommend the following:—Protoiodide of mercury, $\frac{1}{2}$ gr.; ext. hyosciamus, 2 or 3 grs.; aloes, 1 gr., to be given in the form of pill, morning and night—gradually increasing the proportion of the protoiodide up to 2 grains, twice or three times a-day. The next indication to be fulfilled is, to invigorate the system by the use of suitable tonics; for this purpose, the sulphate of quinine combined with the arsenite of potash, is preferable to all others; of the former, 3 to 5 grains, and of the latter, from the 15th to a 20th of a grain should be given twice or three times during the day, and the patient should drink freely of sarsaparilla tea. Under the influence of the above measures, the enlargement or indura-

tion of the liver or spleen will, in a large majority of cases, become resolved, the secretions greatly improved, and convalescence established.

II.--REMITTENT FEVER.

The remittent form of fever next demands our consideration. If the intermittent and remittent forms of fever be, as has been stated, of the same essential nature, and dependant upon the same peculiar cause, why are their general phenomena and causes so materially different? The light of pathology exhibits to us a very satisfactory solution of the question. It teaches us the important lesson, that, though the nature of the primary morbid impression made upon the nervous system, by the common cause, is the same in both, the ultimate effects are widely different.

It is obvious, from all the symptoms which mark the forming stage of a remittent, that there is, in the first place, diminished nervous sensibility; and, secondly, abnormal irritability; in consequence of which conditions, there is manifested, first, a depression of the vital forces, and consecutively an irregularity in their movement, from which arises a loss in the balance which naturally exists between the nervous and vascular systems. So far, the pathology of intermittent and remittent agree; hence, the initial symptoms are almost identical. The forming stage of remittents is, however, of short duration; the chilly sensations are very soon alternated by flushes of heat, and in a short time full febrile re-action is established—manifested by a full, frequent and sometimes tense pulse, hot and dry skin, flushed face, considerably increased pain in the head, back and extremities, great thirst, furred tongue, it being yellow or brown, nausea, sometimes bilious vomiting—a sense of oppression in the epigastric and right hypochondriac regions, and, in the severest cases, by a decidedly yellow tinge of the sclerotic coat of the eye, and of the general surface—the urine being of a deep yellow color.

This stage of excitement corresponds with the hot stage of an intermittent paroxysm, and is dependant upon the same processes

of nature, but its course differs from it materially; instead of terminating, as the hot stage of an intermittent usually does, in a few hours, in free perspiration, and a perfect intermission, it continues, in a more intense degree, for a much greater length of time, and only abates, remits, for a few hours, during which, there is slight moisture on the skin, it still continuing warmer, and the pulse quicker and tenser than natural. This slight remission having continued three, four, or five hours, without any previous cold stage, the fever again rises, until it equals, or exceeds, the violence of the first paroxysm; and, continuing for an indefinite period, again declines, or remits. In this way, successive exacerbations and remissions continue to occur, until the fever either terminates in a perfect crisis, and convalescence, or assumes a more malignant form, and becomes more continued in its course. What, then, are the pathological conditions on which the important differences in the general phenomena of the above modifications of fever are dependant? In intermittents, *if simple*, although there is full vascular re-action during the hot stage, the excitement is simple and general; that is, the circulating fluid is equally distributed throughout the whole system, there being no undue quantity in any one part, and consequently no irritated action in the capillaries of any part, external or internal; hence, in a short time, excitability becomes exhausted, and the system returns to a comparatively apyrexial state. In remittents, on the contrary, there is, from the very commencement, some fixed seat of irritation, or inflammation, most generally, in the mucous coat of the stomach or bowels; in the coverings of the brain, especially the arachnoid; in the liver, and sometimes in the bronchial lining. These local irritations or inflammations, serve as permanent centres of attraction, by which the balance between the nervous and vascular systems continues to be disturbed, and consequently vascular excitement sustained. Having cursorily noticed the chief cause of difference between a *simple* intermittent and remittent, let us, in the next place, enquire into the causes by which a simple becomes converted into a malignant, and more continued form of remittent.

A careful observation of the external manifestations during life, and of the morbid appearances revealed to us after death, conclusively demonstrates that the important change is dependant upon a progressive increase in the extent and grade of inflammation in the vital organs. If the local inflammation is in slight degree,

and of limited extent, the fever, generally, proceeds with regularity, and tends to a favorable crisis, usually about the ninth day. If, however, we should perceive, at each successive exacerbation, a decided aggravation of the symptoms, we may predict, with unerring certainty, that the inflammation is advancing. In all cases of a severe character, whilst all the structures referred to, as being the almost exclusive seats of disease in this form of fever, may be implicated in some degree, inflammation, generally, greatly predominates in one, and the most prominent symptoms are chiefly referable to that point.

If the brain and spinal marrow are principally involved, the patient complains either of considerable pain in the head, or giddiness, or a painful sense of heaviness in the head; he suffers much pain in the back and extremities; there is great restlessness, and disturbance of the sensorial faculties, amounting frequently to violent delirium; there is painful intolerance of light and sound; the scalp is preternaturally hot; the carotids beat with unusual force; the face is flushed; the countenance expressive of much anxiety, and the pulse is quick and tense — sometimes quite full. If the inflammation advances, sooner or later, a new train of symptoms set in, indicative of disorganization; the pain in the head, back and extremities ceases; insensibility increases; there is increased restlessness, low muttering delirium, subsultus tendinum, involuntary discharges; certain indications that inflammation has done its work of destruction, and that the great nervous centres are suffering from its morbid products.

If the mucous coat of the stomach be principally involved, there is pain and a sense of oppression in the epigastrium; tenderness on pressure; nausea, and frequent bilious vomiting; the tongue is loaded with a yellow fur on its surface, whilst its tip and edges are vividly red; there is great thirst for cold and acid drinks, and there is a sense of burning in the stomach; the pulse is usually quick, small and tense; the bowels are generally torpid, at first; the urine scanty, turbid, and very highly colored. The brain becoming sympathetically involved, we have, in addition to the above, the symptoms of cerebral inflammation.

If the mucous coat of the intestinal tube be the chief seat of inflammation, there is great pain in the bowels; tenderness on pressure over the bowels, most frequently over the ileocæcal portion; preternatural heat over the whole surface of the abdomen;

the tongue is intensely red on its edges and tip, whilst its surface is covered with a dirty yellow fur, which sometimes becomes brown or black; the bowels are sometimes, at first, rather torpid; they, however, soon become very loose, the dejections being serous, mucous or bloody; in the worst cases, the abdomen becomes tympanitic; the pulse is generally small, tense and contracted. The brain sympathizes early with muco-enteritis, especially *ileitis*; hence, there is usually severe head-ache, chiefly referable to the forehead; and in bad cases, delirium, at first violent, afterwards of a low muttering character, supervenes.

If the liver be principally implicated, and there is much sanguineous engorgement, there is a painful sense of weight and oppression in the epigastrium and right hypochondrium, severe headache and early delirium, the sympathy between the brain and liver being very great; constant nausea and vomiting—not of bile, but of the ordinary contents of the stomach; the tongue is moist, and but slightly coated; the bowels are generally very torpid; the urine highly colored with bile, and the skin, sooner or later, assumes an intensely yellow color. The hepatic complication most generally occurs in the more southern latitudes, and, where it is associated with a high grade of muco-gastritis and duodinitis, constitutes the very worst form of remittent fever, denominated, from the deep yellow tinge the skin assumes, yellow fever.

Having rapidly glanced at the external manifestations, as evidences of internal inflammation, let us, in the next place, briefly refer to those more unequivocal evidences, the morbid appearances exhibited after death.

If the brain has been the chief seat of inflammation, we discover unusual vascularity in the brain and its coverings, especially the pia mater; the arachnoid is generally thickened and opaque; the substance of the brain, when cut, exhibits numerous red points—and it is changed in its consistence, being sometimes softer, at other times harder than natural; there is more or less effusion into the ventricles, and between the membranes, the fluid being sometimes thin straw-colored serum, sometimes bloody, and at other times gelatinous or purulent, as between the arachnoid and pia mater.

When the mucous coat of the stomach and bowels has been the seat of inflammation, it exhibits the strongest marks of increased

vascularity, thickening, or ulceration in various degrees. This last lesion occurs most frequently in the lower part of the ileum.

When the liver is chiefly implicated, we usually discover strong marks of sanguineous engorgement; the gall bladder is distended with vitiated bile; and the substance of the gland is, frequently, softer than natural.

In considering the treatment of remittent fever, I will notice that which is appropriate to the simple form first, then that which is adapted to the prominent modifications referred to. It should be remembered, that, in this form of fever, there is fixed irritation, or acute or subacute inflammation in one or more of the structures already adverted to, superadded to that peculiar condition of the nervous system which essentially characterizes the febrile state; and that, of consequence, there is permanent vascular excitement, and derangement of the secretions; hence, the important indications are, to subdue vascular excitement; to remove the local affections, and to improve the secretions. These purposes can, generally, be *easily* effected in a large majority of the ordinary cases which occur in our country. During the accession of fever, the patient should be placed in a well ventilated apartment, and be lightly covered; mild aperients should be occasionally administered; cold acid drinks ought to be allowed; the whole surface should be repeatedly sponged with tepid vinegar and water; and the diet should be rigidly antiphlogistic, as gum Arabic solution, rice water, rice or corn-meal gruel, well boiled.

As the bowels are, almost always, torpid, and loaded with vitiated matters, in the commencement of all cases, practitioners universally agree, that purgatives constitute an essential part of the treatment of remittent fever. The chief reliance is placed, by most, on this important class of remedial agents; and especially on mercurials variously combined, on account of the prevailing impression that the functions of the liver are universally deranged. It is true, that *mild*, but efficient purgatives, are indispensably necessary throughout the whole course of remittent fever; but I apprehend that much detriment has been occasioned by the too earnest desire of *some* physicians to secure a "clean house," by the repeated use of active cathartics. With this view, it is a common practice, particularly in the south, to administer very large portions of calomel, combined with aloes, calocynth, jalap or other active articles of the class, and follow them up with saline and

other medicines, so as effectually to *wash* out the intestinal canal; and this plan is pursued, with more or less activity, throughout the course of the fever. When it is remembered, that the mucous membrane of the stomach and bowels is almost always irritated or inflamed, it cannot be doubted but that such active measures must prove highly prejudicial in a large majority of cases. If only irritation exists, it is sure to be converted into inflammation; and if inflammation already exists, it will be, inevitably, greatly aggravated. Of the correctness of this observation, we have but too many melancholy proofs, exhibited under a course of active purgative medicine, such as red and dry tongue, great abdominal tenderness, and copious serous, mucous or bloody discharges; conditions which, in my opinion, arise, in most cases of severe character, from the too-anxious wish of practitioners to *purge* the system of a disease, which, being determinate in its course, will oftener be more effectually eradicated by lenient than by violent means.

The important indications to be fulfilled by purgatives, are the dislodgement of the irritating contents of the alimentary canal, and the improvement of the secretions. If these objects are attained, the fever generally yields very rapidly under the influence of simple auxiliary remedies. It is, in my opinion, rarely necessary or proper, in remittent fever, uncomplicated with cerebral inflammation, to deplete the system by active purgation. If active depletion is indicated on account of high vascular excitement, it is far preferable to draw directly from the currents of the circulating fluid, than to do so by increasing intestinal irritation, which must necessarily render the case more tedious and more dangerous.

In the ordinary remittents of this country, I usually administer, at night, three or four pills, consisting of two grains of calomel, two or three of rhubarb, and one-fourth or one-third of a grain of ipecac. These I find, generally, sufficient to procure two or three gentle bilious operations during the twenty-four hours; if they fail to do so, on the following day, I give a little cold-drawn castor oil, or a seidlitz powder, or infusion of senna and manna, with a drachm of sulphate of magnesia. If the alvine discharges, after the thorough operation of the above, appear natural, I omit the use of the mercurial, and continue the daily use of one or other of the above aperients, in order to keep the bowels in a gently soluble state. By this practice, I avoid, in a great measure, the risk of ptyalism, so

apt to be produced by a frequent repetition of calomel, a common practice in the south, supposed to be indispensably necessary in all cases, on account of the universal implication of the liver. That the functions of the liver are, almost always, more or less deranged, cannot be doubted; but it is equally certain, that, in a great many instances, that derangement is the *effect* of vascular reaction, the secretory vessels of the liver being abnormally excited, and healthy secretion precluded. If, in such cases, vascular excitement be lowered by blood-letting and simple purgatives, the liver will, almost invariably, assume its healthy action. It is, therefore, very unnecessary to incur the danger of ptyalism, by the use of calomel, when, in *simple* cases, it can be safely substituted by other efficient, but innocent evacuants.

If, on the contrary, the alvine discharges should continue to exhibit an unhealthy appearance, that is, should they be greenish or black, and at the same time the tongue much coated, and the urine much colored, it is proper to repeat the calomel, combined as above, every second night, and follow it the next day by some gentle aperient, if necessary, until the tongue cleans, and the biliary secretion is decidedly improved.

If the calomel should prove too irritating, as it often does, producing thin, *spinach*-like discharges, I substitute pills of blue mass, rhubarb and ipecac., in the same proportions as in the above combination, and find them to have a very happy effect. If the discharges should be thin, serous or mucous, and there should be much abdominal pain, provided the head is not seriously disturbed, and the tongue is not very dry, I usually administer a full dose of Dover's powder, ten to twenty grains, or black drop, ten to twenty drops, at night, the bowels having, of course, been thoroughly evacuated. If the internal administration appears to be inadmissible, I order a starch and laudanum injection. The judicious use of anodynes, I am convinced, conduces, in a powerful degree, to the subduction of febrile disorders, by allaying morbid nervous irritability, and, of consequence, the irritated action of the vessels. I generally prefer to give them in the latter part of the night, as then most patients are disposed to sleep, and as the fever, generally, begins to remit at that time, they are better borne.

During the exacerbations of fever, the patient should be frequently sponged with tepid vinegar and water, over the whole surface; he should have a free access of fresh air, and be permit-

ted to drink freely of cold acid beverages, or to take small pieces of ice into the mouth, which, dissolving gradually, produces much more permanent refrigerant effects, and tends, in a powerful degree, to allay gastric irritability; in which respect it is, certainly, very superior to effervescent draughts, or any other internal remedies. The muriatic acid, in the proportion of a drachm to a pint of iced or cold spring water, to be drank in the course of the day, I value very highly as a febrifuge; it is decidedly refrigerant, and unquestionably exerts an emulging influence upon the liver; being sufficient of itself, in many simple cases, after the use of mild aperients, to rectify the biliary secretion. Should the vascular excitement be very high, and, especially, if there is much headache and irritability of stomach, blood-letting should be unhesitatingly adopted, to the extent of making a full impression upon the constitution; and the patient should take repeated small portions of calomel and ipecac., say 1 gr. of the former to $\frac{1}{2}$ or 1 gr. of the latter every two or three hours, until there is a considerable abatement of the excitement; if they fail to operate efficiently on the bowels, a seidlitz powder, or an effervescent senna draught, should be administered; or if necessary, on account of the irritable state of the stomach, injections may be usefully substituted. If the stomach will not bear ipecac. in any quantity, I usually substitute the antimonial powder in the proportion of 2 grs. to 1 gr. of calomel. Most practitioners condemn this preparation, as being altogether inert; but I am convinced, from my observation of its effects in febrile affections, that it possesses valuable febrifuge virtues. It would, in my opinion, be far better for mankind, if it could be substituted in a multitude of cases in which the *favorite* combination of calomel, tartar emetic and nitrate of potash, which is so generally used in the treatment of fevers in the United States, must prove highly detrimental, on account of its irritating influence on the mucous membrane of the stomach and bowels.

When the skin is very hot and dry, I have the patient seated in a large tub, and pour, from a height of five or six feet, eight or ten gallons of *tepid* water directly over the head and shoulders, and permit evaporation to take place. This may be very properly repeated several times in rapid succession, if the excitement is high. This measure is exceedingly grateful and soothing to fever patients, it rarely failing to allay the excessive heat and

restlessness which are, generally, so very distressing. The cold dash is much more frequently used under these circumstances than the tepid; first, because most practitioners are impressed with the belief that the cold is much more refrigerant in its influence than the tepid affusion; and, secondly, because patients desire cold applications. I have used both, and I am satisfied that, except in cases of cerebral inflammation, the latter is decidedly preferable; and indeed, even in this case, unless the cold dash is unremittingly continued until the inflammation is subdued, it is inferior to the tepid.

With the view of acting freely on the kidneys—a very important indication in all fevers attended with high excitement—I usually administer the sweet spirit of nitre, or spirit mindereri, or both combined, to which I sometimes add ipecac. wine.

The various measures above prescribed generally prove sufficient to moderate the febrile excitement and induce a remission, which we term perfect, when the skin becomes tolerably cool and moist, and the pulse comparatively slow and soft; this most usually takes place in the morning, and continues until towards noon. It is important that we should avail ourselves of this respite, to guard the system against the renewal of attack, or rather, to modify the type of the fever. To effect this purpose, I invariably administer quinine in the proportion of three to ten grains combined with one to two grains of ipecac., and repeat the portion every two hours during the remission, requiring the patient to drink freely of balm or sage tea, which, with the ipecac., act on the skin, and enable the quinine to be better borne. I am convinced, from observation of its effects for several years, that remittent fever can be much sooner arrested by this practice than by any other with which I am acquainted; and that convalescence is much more rapid. If the remission is complete, if the bowels have been thoroughly evacuated, and, especially, if the liver has commenced to act properly, I believe that the sulphate of quinine is just as admissible, and, I may add, as efficient in the remittent as in intermittent fever. If there is too much excitement during what we consider the remission, for the use of quinine, I substitute the infusion of serpentaria with elixir vitriol—a wine-glass full of the former with 10 to 20 drops of the latter, two or three times during the remission—with a very good effect.

Sometimes, after high excitement has continued unusually long, with little or no abatement, the patient passes into collapse; the pulse becoming very weak and small; the skin cool and clammy, with great muscular prostration. This condition is exceedingly dangerous, and demands the prompt use of powerful diffusible stimulants, and active revulsives. Wine or brandy should be freely administered; large sinapisms applied to the extremities, and over the epigastrium, and the whole surface well rubbed with dry mustard flour. When full reaction is induced, the mildest means ought to be adopted, in order to allay inordinate excitement, such as cupping, gentle aperient and alterant remedies, and tepid ablutions; and upon the slightest appearance of remission, the system must be brought under the influence of quinine.

Having considered the general treatment of the regular remittent bilious fever, it only remains for me, very briefly, to notice the modifications of treatment appropriate to those more severe and malignant forms, in which there is a great predominance of cerebral, gastric, enteric or hepatic symptoms.

When symptoms of cerebral inflammation predominate, the safety of the patient urgently demands an active antiphlogistic course, proportioned to the period of the disease and the degree of constitutional strength. If such symptoms manifest themselves at an early period, in an individual of vigorous constitution, it is indispensably necessary to draw blood, until a decided impression is made upon the pulse; in order to effect which object as soon as possible, it is best to have the patient in the erect posture. After general blood-letting, it is important to evacuate the bowels, by means of calomel, followed by sulphate of magnesia, or it in a strong infusion of senna; and to apply repeatedly either the cold or the tepid affusion. If the former can be persevered in sufficiently long, it is unquestionably the most powerful adjuvant to blood-letting that we possess in the treatment of acute inflammation of the brain, as it tends, in a most powerful degree, to empty the cerebral vessels. If the inflammation should continue unabated, or having abated, should return, it will be necessary to repeat the venesection, to apply cups to the temples, on the back of the neck, or between the shoulders, or to open the temporal artery; after which, to apply blisters to the nape of the neck, and to the ankles; and to ad-

minister calomel purges, and after them, senna and salts, so as effectually to evacuate the intestines, and divert the circulation from the head; to promote which, the cold affusion should be repeatedly applied, and, during the intervals, the head should be kept elevated, and cold, by either cloths dipped in ice water, or cold spirit. *mindereri*, or by means of a bladder partly filled with water, and having in it a piece of ice. The apartment of the patient ought to be kept somewhat darkened, and as cool and quiet as possible.

If strong marks of inflammation of the brain present themselves at a later period of the fever, when, most generally, the vital powers are, in a great degree, exhausted, general blood-letting is exceedingly hazardous, and, if adopted, should be with great caution; as, under such circumstances, the reactive powers of nature are very feeble. Our chief reliance must, therefore, be placed upon topical blood-letting, blisters to the neck and the lower extremities, the cold affusion, or cold applications to the shaven scalp, and on minute portions of calomel, *ipecac.* and *pulv. antim.*—say one grain of calomel, one-half to one grain of *ipecac.*, and two or three grains of the *pulv. antim.*, repeated every two or three hours, until the system is brought under a slight mercurial influence. Whilst the above combination is being administered, salts and senna, or active enemata should be given, in order to secure proper evacuations from the bowels.

If the inflammation continues to advance, until there are unequivocal evidences of the existence of the morbid products heretofore referred to, our only hope of doing any good is founded on the establishment and continuance of a slight mercurial influence, by the combination prescribed above, on extensive revulsion by means of blisters, and on the judicious use of stimulants and anodynes. The nape of the neck, the epigastrium, and the inner sides of the ankles, should be, simultaneously, made points of revulsion: opium, or some of its preparations, must be administered, in order to allay the general nervous irritability, and wine, brandy, camphor and musk may be administered, with the view of sustaining the sinking powers of nature. We need not dread any ill effects from so extensive a blistered surface as recommended above; the great indication to be fulfilled by revulsives, in these critical cases, is, to arouse the parlyzed nervous system and to invite the vital manifestations to

points as remote as possible from the principal seats of disease. These valuable purposes are often effected by the peculiar irritation induced by cantharides on the skin, and especially on the bladder. Whenever strangury occurs in such cases, the cerebral symptoms are, almost always, more or less relieved. As a stimulant and anodyne, I value the following combination very highly: camphor mixture, 1 oz.; musk, 5 to 10 grs.; carb. ammonia, 5 grs.; acetated tincture of opium, 5 to 10 drops, to be repeated every three, four or six hours, "*pro re nata*." It often exerts a very salutary influence, by controlling the excited nervous system, and thereby, the distressing jactitation, restlessness, and delirium which universally exist; and by sustaining the powers of life, which are, generally, very much depressed. Under the diligent application of the above means, the morbid effects of inflammation are sometimes removed, and the brain and whole nervous system, by degrees, return to the healthy performance of its important functions, and of consequence, there is a progressive decrease of restlessness, delirium, and all other unfavorable symptoms; natural sensibility is restored; the patient becomes tranquil and disposed to sleep, and all the functions of the body resume their healthy action.

In all cases of cerebral modification, after all the symptoms of inflammation have entirely disappeared, all that will be necessary is, to act upon the bowels by the gentlest aperients, improve the biliary and other secretions, by means of occasional portions of calomel or blue mass, and expedite convalescence by the cautious use of quinine; or, if it excites the brain too much, infusion of serpentaria and elixir vitriol.

When symptoms of muco-gastritis and muco-enteritis predominate, it is necessary to arrest the disease as soon as possible, as the structures involved are of the highest importance in the economy of nature, and as the powers of life are liable to sink very early, under the influence of acute inflammation: our most efficient means is blood-letting, both general and topical. Blood should be drawn, from a good orifice, until there is a strong impression upon the system; and, in order to prevent reaction, provided the brain is not much disturbed, a full dose of opium—say 2 or 3 grs., ought to be given in combination with calomel, in the proportion of 5 to 10 grs. The administration of large doses of opium, after free venesection in these cases, is immense—

ly valuable; it tends, in an eminent degree, to allay the irritability of the stomach, the morbid irritability of the whole nervous system, and above all, it counteracts hemorrhagic reaction, and thereby obviates the necessity of a repetition of general blood-letting. Cups, extensively applied over the epigastrium, or over any part of the abdomen that may be the seat of pain and tenderness on pressure, will serve to keep up the influence of venesection. After the cups have been removed, the whole surface of the abdomen should be covered with bran, or cornmeal mush poultices, as hot as the patient can possibly bear, and re-applied every half hour or hour, as long as the tenderness continues. If the stomach is very irritable, and the bowels are torpid, as they usually are, in the gastric modification, purgative clysters, containing salt, should be administered, with the view, not only of effectually evacuating the intestinal canal, but also, by the stimulant impression they make on its lower extremity, of diverting irritation from the stomach to a healthy point. To allay the ardent thirst, the sense of burning in the stomach, and the constant retching and vomiting so distressing in the gastric variety, the frequent use of small portions of ice should be allowed; nothing could be more grateful or soothing, and, next to blood-letting and opium, nothing is more effectual in its operation. If ice cannot be had, cold effervescent draughts may be allowed; I prefer, for this purpose, the citric acid and carbonate of soda. If the above means do not relieve the gastric distress, a large blister should be applied over the epigastrium. As soon as the stomach is entirely relieved, it will be proper to act upon the liver by means of small doses of calomel, as one to two grs., repeated every two or three hours, until good bilious discharges are excited; and to keep the bowels effectually evacuated by seidlitz powders, effervescent senna draughts, or active enemata.

In the enteric variety, I use calomel, in the proportion of one to two grains, combined with Dover's powder, five grains every third or fourth hour, until the tenderness is relieved, and free bilious discharges are induced. The action of the calomel should be promoted by the occasional administration of pure castor-oil, oleaginous mixture, or emollient injections. The hot poultices should be persevered in so long as there is any abdominal pain, or tenderness on pressure; and the patient should drink freely of gum Arabic water, or slippery elm tea. The diet should be the

blandest, such as rice or barley water, well boiled corn-meal gruel, or arrowroot tea.

If the abdominal tenderness continues after the diligent use of the above means, a large blister should be applied over the seat of pain, and kept running as long as possible; and if the case is a very severe one, and the extremities are cool, blisters should be applied to the inner sides of the ancles.

As soon as the local inflammations are subdued, and bilious discharges excited, the fever rapidly subsides, and the remissions become successively more perfect. It now becomes proper to administer quinine with the view of giving tone to the system, and of counteracting the tendency to a recurrence of the paroxysms. From three to five grains of quinine, combined with five grains of Dover's powder, should be given every two or three hours during the remission. For the purpose of correcting the secretions and promoting the gentle evacuation of the bowels, I generally give blue mass, three to five grains, combined with rhubarb, ten grains, every second or third night until the patient is decidedly convalescent.

When symptoms of hepatic derangement predominate, it is necessary to use the lancet until a decided impression is made upon the pulse; then, to apply cups or leeches, extensively, over the epigastric and right hypochondriac regions, in order, as much as possible, to lessen the sanguineous engorgement of the liver, and prepare the system for the use of calomel, which is the most potent remedial agent we possess in this violent modification. If the stomach is very irritable, it will be proper, immediately after cupping, to apply large sinapisms over the epigastrium, and evacuate the lower bowels by means of stimulating enemata, as strong soap and salt in gruel. As soon as the stomach becomes somewhat tranquilized, calomel, 20 grains, should be administered, with the view of producing a full purgative effect; after which, it should be continued in the proportion of two to five grains every two or three hours, until there is decided manifestation of mercurial influence.

Practitioners in the south generally use calomel in very large doses in these cases, and repeat them frequently. My own experience inclines me to the opinion, that after a full purgative portion in the commencement of an attack, the small doses, recommended above, are much better calculated to unlock the liver, and produce

the constitutional effects of mercury. The liver, in this form, is almost always deeply congested; and this condition is, most generally, associated with a high grade of gastric and intestinal irritation; hence, if large doses of calomel are administered, it will aggravate the irritation, in a majority of cases; and instead of inducing proper bilious discharges, it is apt, under such circumstances, to excite thin, black, or verdigris-green discharges, accompanied with much abdominal pain. If the bowels are inactive, as they generally are at first, it will be necessary to promote the action of the calomel by means of infusion of senna and manna, or stimulating purgative clysters, if the stomach continues irritable.

If the alvine discharges are serous or mucous, the small portions of calomel should be combined with Dover's powder in the proportion of five to eight grains. If calomel is given as recommended, and guarded, if necessary, by opium, its salutary influence is soon manifested by the appearance of free, and rather consistent black discharges, which may be regarded as a most propitious omen; for when they occur, except it be in the last stage of malignant cases, when the vital powers are nearly exhausted, we may very safely predict a favorable issue. When such an effect is produced, it will be sufficient to administer, every second or third night, three to five grains of blue mass combined with ten grains rhubarb, until the biliary secretion assumes a healthy appearance.

During the continuance of the above course, the patient should be allowed cold acid drinks, as lemonade, or iced water acidulated with muriatic acid, as heretofore recommended; and whenever there is much febrile heat, the whole surface should be repeatedly sponged with tepid water; or the tepid affusion should be applied from a height of five or six feet. The diet should be the most unirritating, as rice water, corn meal or rice gruel, or arrowroot tea. As soon as the remissions become complete, and especially if the liver has commenced to disgorge itself of black bile, the sulphate of quinine may be safely administered in the proportion of three to five grains combined with five grains of Dover's powder, every three hours, during the remission, with a view of arresting the paroxysms, and promoting speedy convalescence.

III.--CONGESTIVE FEVER.

IN considering this subject, it is not my intention to notice the accidental cases of congestive disease dependent on sporadic causes, nor those congestive superventions which are incident to every form of fever, but to confine myself to that peculiar modification of febrile disease which is characterised, from its very incipency, by strongly-marked symptoms of deep internal congestion, and a great oppression of the powers of life; in other words, that affection which is denominated in the south, pure congestive fever. The frequency of its occurrence, and the fatality attending it in the southern portions of the United States, concur to render it worthy of the most serious consideration of the profession; and demand from every practitioner, who has had good opportunities for observation, the results of his experience, which may serve in some degree to lessen the fatality of this destructive malady, by contributing to the improvement of its treatment. Having had numerous opportunities, during the last ten years, of witnessing this disease, and in some instances, in its most malignant form, in what is called the Tennessee Valley, in North Alabama, I indulge the hope, that a few observations, principally with the view of pointing out the best method of treatment, will not be altogether unacceptable to the profession, and especially to medical men residing in the south, whose painful duty it may often be to observe, and to treat it.

I will cursorily notice, 1st, the etiology—2d, the pathology—and 3d, the symptoms of genuine congestive fever; then detail the plan of treatment which I have found the most efficacious.

In regard to the *causes* of this form of fever, as indeed of all other forms of what is called essential fever, but little is certainly known. Its almost universal occurrence in localities which are favorable to the production of malaria; its co-existence with all the common varieties of miasmatic fever, and all of its distinguishing phenomena, clearly demonstrate the identity of cause, and that that cause must be some powerful and concentrated poison, generated by the decomposition of organic matter.

It requires but a superficial observation of the phenomena of this disease, to be convinced that this cause, whatever it may be, makes its primary impression upon the nervous system; and that all of its characteristic symptoms are the immediate sequences of diminished nervous sensibility. The suddenness of the attack, the numerous indications of nervous derangement, and the rapidly fatal tendency of the disease, conclusively show, that the brain and the whole nervous system—the main springs of life—are almost overwhelmed in the very first assault of the enemy.

The impression made upon the nervous system is proportionate to the intensity of the poison applied; and the effects on the constitution are various, according to the relative force of vital resistance; hence, whenever it prevails, there is every gradation of the disease, from the slight manifestations of congestion, to the most malignant cases, in which the vital forces are completely overpowered. This leads me to the consideration of the *pathology* of congestive fever, which I will point out in a few words.

The whole nervous system being oppressed by a powerful morbid poison, as necessary consequences, all of the vital functions over which it presides, as respiration, circulation, secretion, &c., become greatly impaired; the capillary circulation throughout the entire system becomes much impeded; and there is a centripetal movement in the circulating fluid, in consequence of which the pulse becomes weak, and the general surface cold and contracted, whilst the internal organs become gorged with blood.

The phenomena dependant upon internal engorgements are various, according to the seat and extent of the congestion. When the brain is the chief seat of congestion, the countenance appears contracted, oppressed, and besotted; there is pain or giddiness, or a sense of heaviness in the head; and there is a strong tendency to coma and insensibility. When the lungs and heart are principally congested, there is great præcordial oppression; the respiration is short, hurried, and oppressed, and there is generally a peculiar livid appearance in the face; the pulse is irregular and oppressed; and there is general coldness of the surface. When the abdominal viscera are the chief seats of congestion, there is a sense of great heat and oppression in the region of the stomach, attended with great thirst, and a constant disposition to retching and vomiting; there is also indescribable restlessness; sometimes the bowels are torpid, but most generally

they are very loose—thin, serous discharges passing off in enormous quantities, which contribute rapidly to prostration and death. Autopsic examination usually reveals the true source of all the foregoing symptoms. The various organs are found more or less gorged with blood; which was the cause of their oppression and embarrassment during life.

With this brief view of the pathology, I pass on to the consideration of the *symptoms* of congestive fever. The premonitory symptoms, which are, generally, of short duration, are those which commonly precede other forms of fever, such as languor and lassitude, a sense of weariness, and general uneasiness, loss of appetite, and disturbance of the stomach and bowels. Next to these succeed chilly sensations—alternated by flashes of heat, soon after which the patient has a regular paroxysm, characterized by a protracted cold stage—the system, most generally, being unable to recover its natural temperature before the occurrence of the second paroxysm.

The type of this fever corresponds with the double tertian of the old authors, being subject to quotidian paroxysms, but on each alternate day, to an increased aggravation of the symptoms. Thus, on the third and the fifth days, the paroxysms are usually very severe, and followed by a protracted cold stage, from which the system reacts very slowly. The anxiously looked-for hot stage is rarely or never fully developed, even in what might be called mild cases. But instead of it, the temperature of the whole surface is greatly diminished and irregular—the extremities being much colder than the trunk. The pulse becomes exceedingly weak and quick; the respiration is short, hurried, and difficult; the patient complains of a painful sense of heat and weight in the epigastrium, accompanied with insatiable thirst; there is uncontrollable restlessness; the patient tosses himself from side to side, and often rises up, as if to relieve the oppression of the lungs; there is either pain or giddiness, or sense of weight in the head; and the countenance looks contracted, pale, anxious, and often livid; the tongue is generally moist; and the bowels, in a large majority of cases, are loose, and the dejections serous.

The above sketch presents a tolerably correct delineation of the symptoms of ordinary congestive fever, as they present themselves at an early period of the disease.

They are, however, subject to considerable modification, according as the brain and spinal marrow, the lungs, or the abdominal viscera are the chief seats of congestion; the most prominent symptoms in each case being particularly referable to the chiefly engorged organs.

If the condition above detailed is not soon removed by the recuperative efforts which nature makes to throw off the oppressive load under which she is laboring, aided by proper remedial agents, there is a rapid tendency to fatal collapse. This usually occurs either on the third or the fifth days, when, as has been remarked, the paroxysms are unusually severe. This condition is marked by all the symptoms, which indicate profound congestion, The extremities, and, indeed, the whole surface, become as cold as ice; the whole body is bathed with cold clammy sweat; the skin loses its elasticity, resuming, very slowly, its natural situation, when pinched up; the pulse is very quick, and scarcely perceptible; the thirst is insatiable; and there is uncontrollable anxiety and restlessness; the respiration becomes shorter, more hurried, and oppressed; and there are strong marks of diminished sensibility, as a disposition to lethargy, and even to coma, with great muscular prostration. If unchecked, these symptoms increase with a rapid pace, and soon terminate in death.

But congestive fever does not always follow the regular course above described. Sometimes, instead of suffocated excitement, after the first or second regular paroxysms, there is full and violent reaction, and the stage of excitement continues for twenty-four, thirty-six, or forty-eight hours, with little or no remission, when the system, seeming to be exhausted by the violence of the excitement, rapidly sinks into collapse.

This modification generally occurs when there are internal inflammations, as indicated by pressure over the epigastrium, the right hypochondriac region, or over some portion of the bowels.

In other instances, the first regular paroxysm is succeeded by the strongest mark of deep congestion, and complete collapse of the powers of nature.

So far as my observation has extended, this last modification almost universally occurs either in aged persons, of feeble or broken down constitutions, or in those who have debilitated themselves by the use of harsh purgatives, or by the use of a too common remedy among southern planters, the emeto-cathartic, *salts and*

tartar, which most generally causes great gastric and intestinal irritation, which induces a rapid fluxionary movement in the circulating fluid towards the chylopoietic viscera, which causes inequality of the circulation, and rapidly prostrates, by the copious serous discharges which ensue.

We now come to the most important part of our subject—the treatment of the different modifications of congestive fever. What are the leading indications of treatment in this disease, founded on the pathological views which have been taken of it? The great objects at which we should aim in the use of therapeutic means, are—first, to restore the lost balance of the circulation; second, to restore the suspended secretions; and, third, to counteract the tendency to a recurrence of the paroxysms.

What are the best means of fulfilling the first indication, namely, the equalization of the circulation? There is great discrepancy of opinion among medical men in relation to this. We are informed by Armstrong, that the hot vapor bath, or the common hot bath, with bottles of hot water to the feet and hands, &c., together with calomel and opium, dry brandy and hot ginger tea, are incomparably superior to any other agent for the promotion of reaction.

With due deference to such distinguished authority, I would remark, that whilst I do not doubt the efficacy of the above treatment in the congestive diseases of the great metropolis of England, my experience convinces me that it is, in a large majority of cases, altogether inadequate to the removal of the genuine congestive fever which is incident to unhealthy localities in southern climates.

In the first cases of congestive fever which I ever saw, I confidently relied on the treatment of Armstrong, because I knew of no better practice, and because it seemed to be altogether consonant with reason to give internal stimulants, and apply external heat. The conclusion to which my observations have led me is, that this treatment is inadequate to the restoration of the lost balance of the circulation, only in those cases which are occasioned by common causes; or in the *mildest* cases of pure congestive fever. In all the worst cases of this disease which have come under my notice, the hot bath and most diffusible stimulants have done injury rather than good, the patients appearing, generally, more relaxed and oppressed after they had been used. The remedy

which I estimate above all others, in the treatment of congestive fever, is the affusion of cold water. My own comparatively limited experience, and the ample experience of many intelligent practitioners in the South, sustain me in the declaration, that the affusion of cold water upon the naked body is capable of producing the most beneficial effects; and, in a large majority of even the most malignant cases, of inducing the most complete and permanent reaction. I acknowledge, that when I first used this potent and novel agent, I rather distrusted its propriety, because I could not very well understand how cold, applied to a surface already as cold as ice, could effect any good purpose. But no sooner had I tried it, and witnessed its effects, than I became convinced of the erroneous view which I had taken of its *modus operandi*, and which had deterred me from adopting it sooner. So well am I assured of its invaluable efficacy as a powerful excitant to the nervous system, that I now feel no more hesitation in its adoption, than I do in the use of the lancet in inflammatory affections; for the principle upon which it operates is just as obvious to my mind.

Who would hesitate to dash cold water on a patient who was overwhelmed by the effects of opium? Surely no practical medical man would, if he knew its efficacy. Why? Because it is known to be capable of arousing and sustaining the oppressed nervous system, by the stimulant impression which it makes upon it. Why, then, should there be a doubt about its applicability to a disease which we believe to be dependent upon a poison which oppresses and paralyzes the whole nervous system? The analogy, as regards the condition in the two cases, is perfectly just; and the principle on which the remedy acts is identical. That this is the fact, its almost universal effects abundantly testify.

The modes of application which I have adopted are the following:—Have a broad plank placed upon two chairs, at a convenient distance apart, and place two vessels of hot water on each side, corresponding with the feet and hands; then strip the patient and lay him on his back, on the plank, with his extremities in the hot water, and having at hand twenty or thirty gallons of spring water, or what would be better, water made colder by ice or salt, pour the water from a pitcher, in a full and rapid stream, over the chest and abdomen. The advantage of this mode is, that the cold is directly applied over the most common

seat of congestion, whilst the circulation is invited to the extremities by hot water.

The second mode which I adopt, particularly in cases where the brain and spinal marrow are the chief seats of congestion, is to place the patient upon a blanket on the floor, and cause him to turn upon his side, and dash cold water as forcibly as possible over the head, and down the spinal column. This method is often the most effectual, because its influence is more immediately felt by the great nervous centres. Having applied the water, the patient should be quickly wiped and placed in bed, and be covered with two or three blankets. I have sometimes had the patient surrounded with hot stones, or bottles filled with hot water, after being placed in bed; but I am now satisfied that it is improper to do so, on account of the relaxing influence of the heat, and the debilitating effects of the copious perspiration induced by it. Instead of heating the patient, I cause him, as soon as he has received the cold dash, and is placed in bed, to be extensively and forcibly rubbed, either with dry mustard flour, or salt, or with spirits of turpentine.

The effects of the cold dash are, frequently, permanent, and complete reaction takes place, followed by rapid convalescence. In many instances, however, the effects of the first affusion subside, and the patient relapses into his former condition of coldness, restlessness, and insensibility. In such cases, it is proper to repeat the affusion, until complete and permanent reaction takes place, which may be confidently anticipated in a large majority of the worst cases, provided it is applied sufficiently early.

Unfortunately for the reputation of this invaluable remedy, it is deferred too long, and, most generally, resorted to only as a dernier resource; in consequence of which, the system loses all susceptibility of its impression; or some vital organ or organs become irreparably injured, and hence its use proves abortive.

There is no just reason why its adoption should be delayed. If it is capable of producing such salutary effect in the latter periods of the disease, when the vital principle is almost extinguished; how much more triumphant would be the success attending its use at an early period, when the vital organs, most generally, are not seriously injured, but only burdened with an undue quantity of blood, and when the susceptibility of impression is but little impaired?

As auxiliaries to the cold affusion, I generally apply cups along the course of the spine, over the epigastrium, over the right hypochondriac region, or over the bowels, according to the indications; and at the same time have warm mustard plasters applied to the extremities, and over the different seats of congestion; or have the whole surface well rubbed with strong mustard flour. I have sometimes derived considerable benefit from the application of a narrow mustard plaster along the whole course of the spine.

When, however, there are strong marks of cerebral congestion, a blister to the back of the head, and over the cervical portion of the spine, is decidedly preferable. Diffusible stimulants seem to be indicated; and I usually indulge the patient with occasional portions of any of them which appear to agree best with the stomach. Brandy, and almost all the common spirituous liquors, in most instances which have come under my observation, appear to increase the oppression and sickness of the stomach. Good porter is far preferable to all other internal stimulants, and patients are, generally, very fond of it.

With the view of promoting reaction, and of establishing healthy secretions, I use, in addition to the means above recommended, the following combination: calomel, 10 grs.; sulphate of quinine, 10 grs.; camphor and capsicum or piperine, 5 grs. each; which I repeat every three or four hours until reaction is induced.

Should the bowels be torpid, and the calomel prove insufficient to cause proper evacuations, its action should be promoted by the occasional use of stimulating injections. If, however, the discharges are very thin, as most generally is the case, it is important to arrest them as soon as possible. With this view, $\frac{1}{2}$ to 1 grain of opium should be added to the above prescription.

The above means, thus combined, are admirably calculated to restrain the bowels; to unlock the liver; and, at the same time, to determine to the surface. Some practitioners, especially in the south, recommend enormous doses of calomel, as 50 to 100 or even 200 grains, and repeat them often; and they assure us that they have done more good with it, thus administered, than with all other remedies besides.

My own experience is opposed to calomel in such large doses. I am convinced that small portions, say from 5 to 10 grains, repeated every two, four, or six hours, according to circum-

stances—are better calculated to fulfil the indications for which it is given. When administered in large doses, it is apt to cause copious watery discharges; a consequence which might be very reasonably expected, when it is remembered that the liver and bowels are in an engorged condition, and of course not possessed of their natural susceptibility of impression; hence, such large quantities become a great source of irritation. It is very doubtful whether calomel, in any doses, is capable of producing its specific effect upon the liver, so long as it continues gorged with blood; and when reaction takes place, and this viscus becomes disburdened, small portions much more easily affect it, because they are much less apt to pass off by the bowels.

In regard to the propriety of blood-letting in this form of fever, there is much diversity of opinion. Some, as McIntosh, regard venesection and topical blood-letting as the very best means of cure; others condemn the use of the lancet altogether; whilst others, who, upon pathological grounds, approve it, adopt it with a trembling hand. The correct practice, in my opinion, lies between the above extremes. It cannot be doubted that general blood-letting is altogether inadmissible in some cases; for example, it would be highly detrimental in aged persons, of feeble or broken down constitutions; in persons of very intemperate habits; also, in the latter period of any cases—because, in all these, the powers of life are at a low ebb, and, most probably, the loss of blood by venesection would preclude the possibility of reaction. If, however, a practitioner is called at an early period, to a patient of generally good constitution, and under the meridian of age, and finds him suffering with all the symptoms of *suffocated excitement*, that is, of imperfect reaction, already referred to, he may, very safely, and often, most advantageously, use the lancet very cautiously,—nor would he ever incur any risk if he follows this simple rule: open a vein in the arm, and keep the fingers carefully applied on the opposite pulse, and if the pulse becomes weaker, stop the operation instantly, and, if necessary, administer some diffusible stimulant. If, on the contrary, the pulse rises and becomes fuller and more regular, as it often does, continue the operation until it becomes well developed. When this effect is produced by blood-letting, there generally ensues rapid improvement in consequence of the reaction of the system. Should general blood-letting be deemed

inadvisable, free cupping should be substituted. Cups should be applied along the whole course of the spine, over the chest, over the epigastrium, over the right hypochondrium, or over the bowels, according as the indications of internal congestion predominate in one or other of those situations. The revulsive influence of this operation is often highly beneficial.

If we succeed, by the above means, in producing complete reaction, what course of treatment should be afterwards pursued? If the reaction is moderate, which is most usually the case, all that will be necessary will be to administer mild aperients and alterant medicines in combination, in order to regulate the bowels, and restore the biliary and other secretions to a healthy condition; and at the same time remedies calculated to sustain the weakened powers of nature, and to prevent the recurrence of the paroxysm, to which there is always great liability. The combination I use, with the view to the fulfilment of the first indication, is from three to five grains of blue mass, five grains of rhubarb, and a half grain to one grain of opium, every six or eight hours, until the secretions become of natural color and consistence. To fulfil the second indication, I give from ten to twenty grains of quinine, combined with from five to ten grains of Dover's powder, every three or four hours. I generally confine the use of this combination to the forenoon, beginning with it at about four o'clock in the morning, and repeat it at eight and twelve; after which I substitute infusion of serpentaria, because there is commonly some tendency to excitement in the afternoon. For the same reason, if it is deemed necessary to administer aperient medicines, it should be given in the evening, as there is then much less liability to a depression of the system, from depletion in any form.

Sometimes, however, the reaction is violent, and unless it is moderated, the organs which have just been gorged with blood, and consequently weakened and irritated, will rapidly become the seats of violent inflammation, which will be difficult of removal, on account of the inability of the system to bear depletion to any great extent. In such cases, it is necessary to apply cups over the various seats of congestion, administer calomel, and after it oil or infusion of senna with ginger, and repeatedly use either the cold or the tepid affusion. If these means fail, it may be proper to draw blood from the arm; but this should be done

with great caution, as the power of resistance in these cases is generally so low, that not unfrequently high excitement is suddenly followed by symptoms of prostration. In cases where blood-letting seems to be demanded, the pulse should be very carefully watched, and upon the slightest manifestation of failure, the orifice should be closed; and, if necessary, a little wine, brandy, or porter, should be given.

The above means are usually sufficient to reduce the excitement to a proper standard, when the alterant and aperient combination, together with quinine, can be administered, as above directed.

Suppose, however, that notwithstanding the diligent use of all the means which have been recommended for the purpose of arousing a patient from the collapse of congestive fever, he still continues for several days without any reaction, what should be done? I seriously apprehend that nothing can be effectual, as in such cases, generally, the injury done to the vital organs is irreparable. Still, as we should never give up the ship until it sinks, and, as sometimes patients recover contrary to all reasonable expectations of physicians and friends, it is our duty to continue, unremittingly, to apply every means which can possibly do good. Under such circumstances, I would chiefly rely upon the occasional use of the cold bath, large and numerous synapisms, blisters, hot spirits of turpentine, calomel often repeated, large doses of quinine, and the free use of brandy or porter.

In conclusion, I will briefly notice the most appropriate regimen during the continuance of the disease, and in convalescence. It will be remembered, that in congestive fever, the stomach and bowels are in an engorged and oppressed condition, and that, of consequence, their important functions, digestion and chylification, are greatly impaired; hence, it is very necessary to adapt the aliment to the weakened digestive organs; otherwise it is sure to become a source of increased irritation. Rice water, barley water, arrowroot tea, well made gruel, or chicken-water, are the best articles of diet, during the course of the disease, and also for several days after convalescence commences. After the strength of the digestive organs has somewhat improved, chicken broth, boiled milk, or milk and mush, would be altogether appropriate for a few days, after which the patient can return to his usual diet. For drink during convalescence, nothing is so good as old

porter, as it is decidedly tonic, and as it generally serves to relieve the unpleasant sickness, and sense of sinking so often complained of by patients who have suffered from congestive fever.